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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/842,483	04/25/2001	Guohua Li	09792909-5001	7927

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SONNENSCHN NATH & ROSENTHAL
P.O. BOX 061080
WACKER DRIVE STATION
CHICAGO, IL 60606-1080

EXAMINER

RUTHKOSKY, MARK

ART UNIT	PAPER NUMBER
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1745

DATE MAILED: 12/19/2002

5

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/842,483

Applicant(s)

LI ET AL.

Examiner

Mark Ruthkosky

Art Unit

1745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 April 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 April 2001 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Drawings

2. The examiner has approved the drawings, filed on 4/25/2001.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

4. Claims 1, 3, 5, 7, 9, 11, 13 and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Goodenough et al. (US 5,910,382.)

Art Unit: 1745

The instant claims are to a cathode material for lithium secondary batteries comprising lithium transition metal phosphate structures such as $\text{Li}_x\text{Mn}_y\text{Fe}_{1-y}\text{PO}_4$. Goodenough et al. (US 5,910,382) teaches a cathode material for lithium secondary batteries comprising LiMPO_4 , where M is Mn, Fe, Co, Ti, Ni and combinations thereof. It is noted that the composition of element A in claim 3 does not require an amount greater than zero and therefore the reference reads upon the claim. Examples of structures include $\text{LiMn}_x\text{Fe}_{1-x}\text{PO}_4$, and $\text{LiTi}_x\text{Fe}_{1-x}\text{PO}_4$ wherein X is between 0 and 1 (see col. 2 and claims 1-9.) The combinations of metals read on the structures of the instant claims. Battery components are discussed throughout the reference and in claim 1. Thus, the claims are anticipated.

5. Claims 1, 3, 5, 7, 9, 11, 13 and 15 are rejected under 35 U.S.C. 102(e) as being anticipated by Honbo et al. (US 6,458,488.)

Honbo et al. (US 6,458,488) teaches a cathode material for lithium secondary batteries comprising $\text{Li}_{x+a}\text{Mn}_{2-a+b}\text{MbPO}_4$, where M is Cu, Fe, Co, Cr, Ni and combinations thereof. It is noted that the composition of element A in instant claim 3 does not require an amount greater than zero and therefore the reference reads upon the claim. The combinations of metals read on the structures of the instant claims. Battery components are discussed throughout the reference and in claim 1. Thus, the claims are anticipated.

6. Claims are rejected under 35 U.S.C. 102(b) as being anticipated by Kariru (JP 11-025983).

Kariru (JP 11-025983) teaches a cathode material for lithium secondary batteries comprising $\text{LiM}_{1-x}\text{Me}_x\text{PO}_4$, where M is Mn, Co, Ni and Me is Mg, Fe, Ni, Co, Mn, Zn, Ge, Cu or Cr. It is noted that the composition of element A in instant claim 3 does not require an amount

Art Unit: 1745

greater than zero and therefore the reference reads upon the claim. The combinations of metals read on the structures of the instant claims. Battery components are discussed throughout the reference and in claim 1.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims are rejected under 35 U.S.C. 103(a) as being unpatentable over Goodenough et al. (US 5,910,382) in view of Iwata et al. (US 5,807,646.)

Goodenough et al. (US 5,910,382) teaches a cathode material for lithium secondary batteries comprising LiMPO_4 , where M is Mn, Fe, Co, Ti, Ni and combinations thereof. It is noted that the composition of A in claim 3 does not require an amount greater than zero and therefore the reference reads upon the claim. Examples of structures include $\text{LiMn}_x\text{Fe}_{1-x}\text{PO}_4$, and $\text{LiTi}_x\text{Fe}_{1-x}\text{PO}_4$ wherein X is between 0 and 1 (see col. 2 and claims 1-9.) The combinations of metals read on the structures of the instant claims.

Goodenough et al. (US 5,910,382) does not teach a cathode material with a grain size not large than $10\text{ }\mu\text{m}$ and a Bulnauer Emmet Taylor specific surface area of not less than $0.5\text{ m}^2/\text{g}$. Iwata et al. (US 5,807,646), however, teaches a lithium manganese oxide material with a grain size not large than $10\text{ }\mu\text{m}$ and a surface area of not less than $0.5\text{ m}^2/\text{g}$ (see the claims.) It would be obvious to one of ordinary skill in the art at the time the invention was made to prepare an

Art Unit: 1745

active material for an electrode with a grain size not larger than $10\ \mu\text{m}$ and a surface area of not less than $0.5\ \text{m}^2/\text{g}$. If the material is less than $0.5\ \text{m}^2/\text{g}$, the material tends to work at a decrease rate of utilization and show a low charge/discharge capacity. If the active material for the electrode has a grain size larger than $10\ \mu\text{m}$, the electrode shows a low charge/discharge capacity, (as shown in col. 4, lines 30+.) One of ordinary skill in the art would recognize from these teachings that it is preferable to prepare a lithium electrode with a grain size not larger than $10\ \mu\text{m}$ and a surface area of not less than $0.5\ \text{m}^2/\text{g}$.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The cited art does not read upon the instant claims, however, the references include general teachings and relevant features as to the state of the art at the time of the invention.

Examiner Correspondence

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1193. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mark Ruthkosky whose telephone number is 703-305-0587. The examiner can normally be reached on FLEX schedule (generally, Monday-Thursday from 9:00-6:00.) If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached at 703-308-2383.

Art Unit: 1745

The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Mark Ruthkosky

Patent Examiner

Art Unit 1745

Mark Ruthkosky
12/14/02